

OPTICAL DISC MEDIUM HAVING A SYSTEM INFORMATION RECORDING  
AREA OF LOW RECORDING DENSITY

5

BACKGROUND OF THE INVENTION

1. Field of the Invention:

10 The present invention relates to an optical disc medium for use in carrying out recording/reproducing of information using an optical minute spot and an optical disc apparatus for recording and reproducing thereof.

2. Related Background Art:

15 In an optical recording, recording or reproducing of information is carried out by forming a minute spot using an object lens on a disc recording surface. A recording/reproducing characteristic is determined by a size of the minute spot and by a length of a recording pit formed on the recording surface.

20 It is known in the art that the size of the spot is in proportion to a wavelength  $\lambda$  of an optical source and is in inverse proportion to a numerical aperture NA of an object lens. When recording pits formed in the optical disc have a short cycle, an amplitude of a reproduced signal obtained as variations of a reflected light beam from the object lens becomes gradually small and becomes zero at  $0.5 \times \lambda / \text{NA}$  because the reproduced signal is cut off.

25 Fig. 1 is a graph showing a relationship between a pit cycle in the optical disc and the amplitude of the reproduced signal. In Fig. 1, the abscissa represents the pit cycle and the ordinate represents the amplitude of the reproduced signal.

In almost all recording methods of the optical disc, front edges or rear edges of pits correspond to transitions between "1" and "0" of a train of encoded data. Accordingly, in almost all recording methods of the optical disc, a shortest pit length is equal to a shortest length between the pits. As a result, a half of the pit period shown in